March 4, 2002 [Number 222]

Complete Articles   Printable Version [469k PDF]
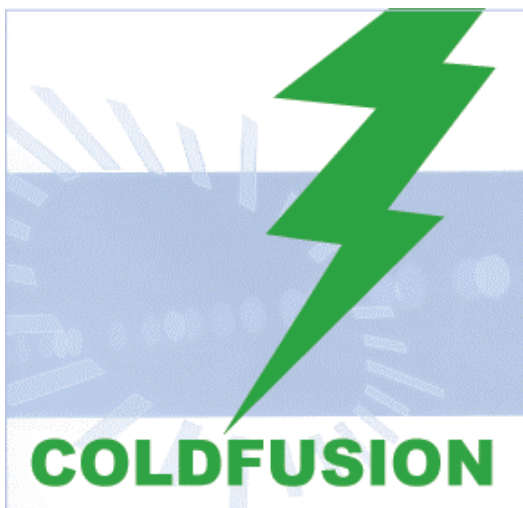
COLDFUSION

Major Articles

Table of Contents

Interface is a Web-based journal. You can receive notice of a new issue of *Interface Online* by joining the "Interface" list via the NIH Listserv [http://list.nih.gov/archives/interface.html]. You can receive information specific to the OS/390 systems by joining the "CIT-Titan-News" list [http://list.nih.gov/archives/CIT-Titan-News.html].

Features

Features

ColdFusion Hosting is Now Available at CIT

The Gartner Group says ColdFusion's combination of application-development technology with advanced features for data integration offers "a compelling solution to companies looking for rapid Web-application development." CIT is pleased to offer hosting for ColdFusion Web applications at the NIH Computer Center. This service provides a production-quality environment for ColdFusion applications using the latest ColdFusion technologies.

ColdFusion, a product of Macromedia, provides a tool for quickly developing robust Web applications with advanced features for data integration. Using ColdFusion, an application can access and write data in a variety of databases (e.g., Oracle, Microsoft SQL Server, DB2), implement sophisticated program logic, create and send email, and provide a user-friendly Web interface via a Web server like Microsoft's Internet Information Server (IIS).

You can develop your application locally using various tools like ColdFusion Studio and, when it's ready for production, move your code to a CIT ColdFusion server. You don't have to worry about acquiring server hardware, upgrading the operating system, installing or configuring the ColdFusion server software, monitoring the security of the Web server, or maintaining network connectivity. All this is taken care of by CIT staff.

The CIT ColdFusion servers run on the Windows 2000 platform and use the latest release of the ColdFusion Enterprise Server (Version 5), in conjunction with Microsoft's IIS.

Levels of Service Available

CIT's standard ColdFusion hosting service is intended to offer dependable and economical hosting for fairly small or entry-level applications. This service is appropriate for individuals or organizations that are exploring the advantages of ColdFusion applications, or who use ColdFusion as a quick way to provide dynamic Web applications for their labs or offices. The standard service applications share a ColdFusion server but can each have a unique "virtual" Web address.

Each application using CIT's standard ColdFusion service is provided with:

- up to 100 MB disk space
- 7 x 24 server monitoring
- monthly usage reports
- access to a staging ColdFusion server for pre-production testing

This standard service costs $200 per month—plus a onetime $200 setup fee.

If an application's needs exceed the capabilities of CIT's standard service, there are several additional possibilities that can be tailored to an organization's requirements. These "extended" services include additional processing capability (even a dedicated server if appropriate), more frequent reports, and

security certificates. Since the NIH Computer Center operates on a cost-recovery basis, an organization will only be charged at CIT's cost for providing the services.

Web Site for ColdFusion Hosting

Additional details of the various features offered and information about how to get started with CIT's ColdFusion hosting services are available online [http://cfhosting.cit.nih.gov].

New Scientific Applications Are on Biowulf

Scientists at the NIH can utilize the high-speed computational capabilities of the Biowulf/Lobos3 supercluster to enrich their research. Managed by the Helix Systems staff, Biowulf is a parallel-processing system available to all NIH researchers.

Biowulf consists of a main login/administrative node and about 800 processors running the Red Hat Linux operating system.

The scientific software available on Biowulf has been recently expanded so that even more researchers can take advantage of the supercluster.

Computational Chemistry

Biowulf—800 processors running Red Hat Linux

• **Molecular Dynamics Packages**

Two major molecular dynamics (MD) packages are available on Biowulf—CHARMM (Chemistry at HARvard Molecular Mechanics) and AMBER (Assisted Model Building with Energy Refinement).

MD calculations can involve significant message passing between the nodes, so that in some cases the job can benefit significantly from a faster internode network. Two executables are available for each program to support the different types of internode communications on Biowulf (e.g., fast Ethernet and Myrinet 2000).

CHARMM

Cover scripts for CHARMM, developed by
Dr. Richard Venable (FDA/CBER), allow
the user to select the CHARMM version
and the communication network. Novice
CHARMM users may find their runs
greatly simplified by use of these scripts.
Advanced users can use these scripts with
their own versions of CHARMM.

AMBER

AMBER is a molecular simulation package
that contains a large number of modules.
It is important to note that only sander,
sander classic and gibbs are
multithreaded.
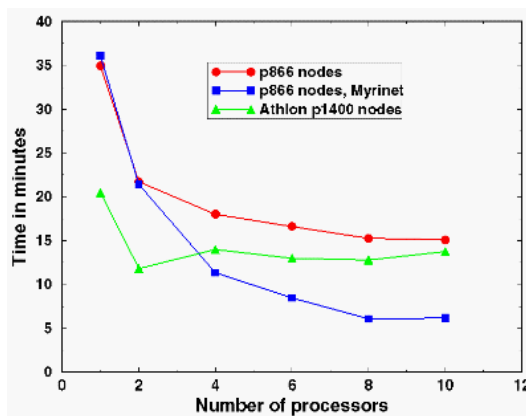
AMBER—*One iteration of Sander for a single-stranded
dinucleotide (5'-AT-3') plus one sodium ion in a periodic box
of water molecules. Comparison of timings on different nodes
and network types.*

- **Quantum Mechanical Calculations**

    Quantum mechanical calculations can be performed using GAMESS or GAUSSIAN 98.

    ### GAMESS
    Gamess is a general ab initio quantum chemistry package. Among the possible quantum
    mechanical computations are molecular wavefunctions, energy corrections, optimized molecular
    geometries, and potential energy surfaces.

    ### GAUSSIAN 98
    Gaussian 98 can predict energies, molecular structures, and vibrational frequencies, and model
    them in both their ground state and excited states, as well as perform many other electronic
    structure calculations.

    GAMESS is multithreaded, so that a single job can run in parallel on multiple nodes. In contrast,
    GAUSSIAN 98 is single-threaded. The benefit of using it on the Biowulf cluster would be to run
    many single-node jobs (a "swarm" of jobs) simultaneously.

Statistics

As measured by cpu cycles on the supercluster, statistics follows immediately behind molecular dynamics
and quantum chemistry applications. GAUSS and R—the statistical packages available on Biowulf—are
not parallelized. The best way to use them would be to run "swarms" of single-threaded jobs.

GAUSS—a fast matrix programming language designed for computationally intensive tasks—has a wide
variety of statistical, mathematical, and matrix-handling routines. R is a language and environment for

statistical computing and graphics, and provides a wide variety of statistical and graphical techniques such as linear and nonlinear modeling, time series analysis and clustering.

Sequence Analysis

In this post-genomic era at NIH, many computational projects naturally involve nucleotide and protein sequences. Whole-genome studies, or those involving microarrays, produce vast amounts of sequence data that needs to be compared against other enormous sequence databases.

> ### BLAST, BLAT and Pfsearch
> BLAST, BLAT and Pfsearch are three sequence analysis packages that have been set up on the Biowulf cluster to analyze hundreds or thousands of sequences. BLAST and BLAT use different algorithms to compare query sequences against databases, while Pfsearch searches a database for a specified pattern. A convenient system has been set up on Biowulf to make it easy for users to perform large numbers of BLAST or BLAT searches. In a typical project, one user BLASTed 20,000 DNA sequences against the human genome database in 8 hours—instead of 500 to 1000 hours using more conventional systems.
>
> ### HMMER
> Soon to come is HMMER, Sean Eddy's package that uses profile hidden Markov models to perform sensitive database searching.

Other Ways to Use Biowulf

Of course, use of Biowulf is not restricted to the software described above. Any parallelized program can be installed on the supercluster. Even more useful, any project that requires many runs of a single-threaded program can take advantage of "swarm"—a general-purpose command that makes it easy to submit large numbers of independent jobs.
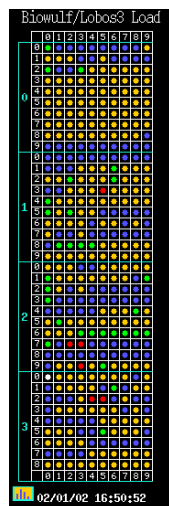
Biowulf's System Monitor
Developed by the NIH staff, the monitor shows node activity. Each "dot" represents a dual-processor node. Red, orange and green are busy nodes; blue nodes are idle. The monitor can also be used to display activity associated with a single job or a single user.

See the illustrations in color at http://datacenter.cit.nih.gov/interface/interface222/biowulf.html

Biowulf usage has been steadily growing since it was first built, and the hardware and networking have been expanding in tandem. By the end of this year, the supercluster will comprise more than 1000 processors and over 500 gigabytes of RAM memory. The hundreds of individual nodes are interconnected by six fast Ethernet switches on a gigabit Ethernet backbone. Also connected to the backbone network are four high-performance fileservers with access to over a terabyte of user data.

Visit the Biowulf Web site [http://biowulf.nih.gov]. More information about installed scientific software can be found online [http://biowulf.nih.gov/apps.html].

Keeping Up With the NIH Data Warehouse

There must be a reason why over 2,900 of your fellow employees are using the NIH Data Warehouse to assist with their daily work. Perhaps because Data Warehouse (DW) provides useful and timely information, or because we listen to your needs, we are constantly adding to the information DW offers. A collaborative effort between the DW staff and the NIH community, the NIH Data Warehouse is designed to meet your reporting and analysis needs.

A few of the recent enhancements made to the NIH business areas are in the Travel, Budget and Finance, and Human Resources business areas.

DW*Query* Tool for Travel

Have you ever needed to report

- Foreign Travel taken by employees and contract staff to meet Congressional mandates? or
- annual leave days taken by employees while on travel?

Have you been asked questions concerning sponsored travel or concerning reimbursement for sponsored travel? Answers to many more questions are now available to you in the Travel area of DW.

In addition, the following information has recently been added to the Travel area:

- pay approved date, traveler's title, order release for payment date
- additional travel costs information
- leave information while on Travel
- seven new sponsored travel reports

DW*Query* Tool for Budget and Finance

Wouldn't it be nice if you could compare current-year money against prior years or obtain a complete history of payments made against specific orders?

- DW allows you to report your financial activity for the current and five past years. You can easily run comparisons of obligations by fiscal year, CAN and even object class code. This information is updated nightly—like most DW information.

- You can now access payment information for the past ten years. This new payment history feature can be used to answer disputes with vendors or to track payments against specific orders or contracts.

Human Resources

How easy is it for you to pull together demographic and cost information on civilian, Commissioned Corps, IRTA, and visiting fellows? This type of information is easily accessible with a click of a button—via two handy decision support tools, DW*Query* and DW*Analyze.*

- **DW*Query***—presents information in a traditional report format, offering NIH defined standard reports and user created ad hoc reports.

- **DW*Analyze***—provides a dynamic analysis format that allows the user to select data combinations and levels of detail.

- **Workforce Demographics**—contains information that is often needed to supervise and analyze the following types of personnel matters:

    - tenure tracking
    - forward planning for attrition or within-grade-increases
    - analysis of salary bands for both FTE and non-FTE staff
    - evaluation of workforce diversity

    Workforce demographics also gives you other valuable reports:

    - head counts by grade, series and salary range
    - all personnel eligible for a within-grade increase or retirement within a specified date range
    - individual employee information including last promotion date, current grade and step, education level, and organization code
    - staff diversity

Please visit our Web site [http://datatown.nih.gov] for more than access. The DW Web page contains a wealth of information—the online registration, technical support and news, as well as links to other NIH systems. You can also view and register for upcoming CIT training classes on DW.

The Latest Issue of *NBRSS Today* Is on the Web

The newsletter, *NBRSS Today*, will help you to keep abreast of ongoing activities with the NIH Business and Research Support System (NBRSS) project. NBRSS includes two enterprises—the NIH Business System (NBS) and the Enterprise Human Resources and Payroll (EHRP) system—and is being developed to replace the ADB system.

The February edition is now available via the NBRSS Web site [http://nbs.nih.gov/].

SAS Upgrade for OS/390 Systems Is Coming in May

Version 8.2 (TS2M0) of SAS will become the production version on the OS/390 Titan and South systems on May 6, 2002. This version includes corrections for bugs, as well as new features and improvements. Among the enhancements:

- *Output Delivery System*—New statements are available, and new style attributes, options, actions and path are now supported.

- *I/O enhancements*—When a request is made to compress a SAS dataset, SAS will issue a warning if the compressed dataset will not save space and will not compress the dataset.

- *Language elements*—New formats, infomats, functions, CALL routines, automatic macro variables and system options are now available.

- *Procedures*—New SAS procedures have been added and existing procedures enhanced.

- *Universal printing*—This printing mechanism provides printing support to all operating environments.

Detailed information on all these enhancements and more can be found on the online documentation [http://statsoft.nih.gov/pubs/onldoc.htm]—along with more than 40 other SAS manuals.

What You Can Do Now

To ensure a smooth transition, CIT encourages all SAS users to move to Version 8.2 immediately and to test their current SAS applications. To execute Version 8.2, use the following execute statement:

```
//  EXEC  SAS820
```

On May 6, the customary EXEC SAS statement will automatically execute Version 8.2. Any questions, comments or problems regarding Version 8.2 should be directed to CIT's help desk, TASC—ask for SAS help.

Online Help

CIT offers help with version 8.2 online [http://statsoft.nih.gov]. The page contains links to services, online publications (as HTML and PDF files) and new features.

Safe in the Palm (Pilot) of Your Hand—Advice on Securing Portable Systems

If you're one of the many people who use a portable communication system—laptop, Palm Pilot, Pocket PC, BlackBerry or other PDA (personal digital assistant)—you better be prepared to lose it, and the information in it. While PDA size, convenience, portability and amount of information you can store are phenomenal, the technology is new and has major inherent security risks. If you use portable communication systems to conduct government business, certain rules apply; you are obliged to protect them, and more importantly, the information they contain.

PDAs have become an invaluable tool for remotely getting email, maintaining a calendar, to-do lists, and address books, and for taking notes; however, they also present several security threats. They have blurred the partition between work and personal information because people use them to do their jobs as well as to record a trove of personal information. They often contain identification information, birth dates, personal preferences, Internet addresses, even passwords, and commonly contain confidential/sensitive information.

Applying the same safeguards you use to secure your desktop system, be particularly careful when storing sensitive information (patient and/or research data, security information, personnel information or information subject to the Privacy Act) on portable systems. If you are remotely accessing NIH IT resources, all requirements of the NIH remote access policy apply. This guidance is found online [http://irm.cit.nih.gov/security/GuixSecuData.html].

Guard Against Theft

Think of portable devices as cash—don't tempt people. Easily stolen and concealed, these items are targets. If traveling, consider storing these devices where a thief would not look, for example in a sports bag rather than a computer bag.

Keep the Data Safe

Your first defense is a strong password. If the device came with a default password, change it immediately. Never store passwords—especially on a PDA. Sensitive information should be stored encrypted, and if you use a laptop, never save sensitive data on the hard drive. It's a good practice to store data disks apart from the laptop.

Because you can give and receive viruses each time you connect to the network (or transfer data through an infrared port), make sure you have up-to-date anti-virus software, and be careful with whom you exchange data. As with PCs, beware of downloading freeware or shareware software from untrusted sources since they may contain viruses or other malicious code.

Check out the security features on your portable device and enable them (using "private" or "hide" features). Third party vendors have already developed PDA biometric safeguards, like a fingerprint reader, and a variety of encryption password technologies exist. However, while the information is encrypted or marked "private" on the handheld, it may not be encrypted on the desktop unless additional software is used. Opening the database for the address book, memo pad, or other files in the Palm directory with Notepad can allow a person to display and copy contents of these files. This is of particular concern if you lose your PDA, or synchronize your PDA to a laptop that is stolen or lost. Provide some contact information at the login prompt so that an honest person could return a lost device to you.

Be Careful when Synchronizing PDAs with PCs

It's wise not to leave your PDA in its cradle connected to your PC because someone could enter your office and replace the PDA with their own. They could start sending inappropriate email (with you as the sender), and they could download information from your computer. A screen saver password on your PC is advisable. If you synchronize your PDA with your home computer, you need to be careful that sensitive government information is not being transferred between the two. The Palm VII and VIIx include a wireless modem that—when placed in a cradle on a PC connected to NIHnet—literally establishes an unprotected back door into NIH networks. The same issue applies to standard dialup modems that are used with PDAs.

Backup Important Information

Should you lose your portable device, a recent backup of the information will help allay that feeling of panic. However, be aware that a backup of a device may not always backup third party applications installed on your PDA. Consider using products like BackupBuddy (from Bluenomad) or backing up your PDA to a secure digital/multimedia card, compact flash or memory stick device that are available for most recent hardware releases from virtually all PDA manufacturers.

Understand Wireless Communication

It is essential to understand how your device communicates to the outside world. While "syncing" is a way that information is exchanged, actual wireless communication (where information is transferred without physical connections) must be highly secured.
Two types of wireless communication particularly relevant to the use of handheld devices include:

- **Personal Area Networking (PAN)**
  Infrared or Bluetooth technologies are cable replacement tools that allow you to synchronize information in close proximity. Bluetooth allows you to automatically update your cell phone's address book by placing it next to your computer. However, there are no security measures in this type of wireless networking. The National Security Agency (NSA) advises that Bluetooth should be turned off on every device that comes in contact with Federal data. In addition, remember that the infrared communications port on your PDA is also a route for virus transmission or the transfer or capture of malicious code or sensitive data.

  Always practice "safe beaming." If you beam someone information, be it an address or a document file, there is nothing to prevent someone else from intercepting the data if they are within range. And just like opening your e-mail on your desktop, be careful and make sure you know the person from whom you are accepting information—this becomes even more of a necessity with Bluetooth, and other wireless enabled devices like mobile phones, if no encryption/security is present. As mobile devices proliferate the virus threat to them will be on the increase.

- **Wireless Wide Area Networking (WWAN)**
  This refers to the cellular technologies that people have been using for cell phones and pagers. It allows users to travel between buildings—even across the globe—and still have access to their information. Devices like Palms and PocketPCs allow users to add software for secured wireless communication and some of the newest devices, like the Palm i705 and PocketPC 2002 have built-in encryption.

  The Federal government has certified the BlackBerry device as providing secure wireless communication. NSA has certified it for all non-secret data transmission, and the Food and Drug Administration, which deals in proprietary and highly confidential data, has approved it for use in all situations where wireless technology is needed.

It is always important to add device-level security as well as wireless security. This is the only way you can truly achieve end-to-end security.

Remember These Things

- Understand how your portable system functions—including security features and communication services.
- Use the device in accordance with NIH policies and guidance—in particular, password protection, anti-virus software and encryption.
- Protect the device from theft or unauthorized disclosure.
- Exercise good common sense.

Check with your local IT staff or information system security officer if you need help securing your portable device. The ISSO roster is on the Web [http://irm.cit.nih.gov/nihsecurity/scroster.html].

Categorizing Data Sensitivity for Computer Security

Better to be despised for too anxious apprehensions, than ruined by too confident security.
Edmund Burke

The following material on computer security is adapted from the NIH Computer Security Awareness Training Webpage [http://irm.cit.nih.gov/sectrain/infosb.html].

Computer security efforts are based on the need to protect sensitive information in applications and critical data processing capabilities such as facilities, computers, networks and applications. The DHHS Automated Information Systems Security Program (AISSP) Handbook gives us guidelines for determining security level requirements based on:

- *sensitivity of data*—the need to protect data from unauthorized disclosure, fraud, waste, or abuse
- *operational criticality of data processing capabilities*—the ramifications if data processing capabilities were interrupted for a period of time or subject to fraud or abuse

This article provides an overview of data sensitivity. Information on "criticality levels"—how loss of data at those levels would affect the ability of NIH to accomplish its mission—can be found on the Web [http://irm.cit.nih.gov/sectrain/infosb.html].

The system manager determines the security level, based on consideration of both the sensitivity of data and criticality of the information system. The security level is used to develop the requisite safeguards that will be required to adequately protect the system. Users are responsible for following the safeguards associated with the systems they use.

All NIH data has some degree of sensitivity, even data that is intended for unrestricted access by many and varied individuals and groups. Also, NIH is so dependent upon computers and networks that these capabilities are considered critical to some degree, otherwise resources would not be applied to managing them. Below are examples of sensitive information:

- drug formulas
- grant applications and pre-contract award information
- ongoing confidential research
- performance review information for NIH personnel
- patient records
- personnel records
- identification of individuals who are barred from receiving federal contracts
- arrest/crime records at NIH
- information regarding funding and budgets

Levels of Data Sensitivity

Sensitivity levels are determined by the type of information in an automated system. Level 1 applies to information with the least amount of sensitivity and Level 4 applies to information with the greatest amount of sensitivity.

- **Level 1—Low Sensitivity**

  Information at this level requires a minimal amount of protection. This level includes information that is considered to be in the public domain, such as employee locator files. At this level, any disclosures could be reasonably expected not to have an adverse effect. But remember that all information is important, otherwise it would not be collected.

  Unintentional alteration or destruction is the primary concern for low sensitivity information.

- **Level 2—Moderately Sensitive**

  Level 2 or Moderate Sensitivity includes data that are important to NIH, and therefore must be protected against acts that are considered to be malicious and destructive. However, disclosure problems are usually not significant since this type of data is often collected for analytical reasons.

  This level includes information that pertains to workload, staffing, correspondence, memoranda, and other document files whose release or distribution outside the federal government and/or within NIH needs to be controlled. Access to Level 2 data needs to be restricted only to a limited degree. The data must be protected from unauthorized alteration or modification due to its value to the organization; however, it may be disclosed in some format eventually.

Moderately sensitive data can include information that must be protected to meet Privacy Act requirements. At this level, unauthorized disclosures could cause embarrassment to an individual.

- **Level 3 — High Sensitivity**

  Everyone at NIH should be most aware of the protection requirements for Level 3 or High Sensitivity information. This level covers the most sensitive information at NIH and requires the greatest security safeguards at the user level.

  This data could include computerized correspondence and document files that are regarded as highly sensitive and/or critical to an organization, and therefore must be protected from unauthorized alteration, modification, and/or premature disclosure; proprietary information that has inherent informational value, such as drug formulas, trade secrets, and early research findings; financial data that is used to authorize or make payments to individuals or organizations; clinical trial data; grant application review data; automated systems or records subject to the Privacy Act for which unauthorized disclosure would constitute a clearly unwarranted invasion of personal privacy.

  Highly sensitive data must be protected from unauthorized disclosure.

- **Level 4 — High Sensitivity and National Security**

  This level of data does not apply to NIH.

The important thing to remember about sensitivity levels is that you must take active steps to protect all sensitive data/information. If you are not familiar with the specific safeguards required with your systems, contact your local IT staff, ISSO, or the TASC help desk for assistance. The ISSO roster is located on the Web [http://irm.cit.nih.gov/nihsecurity/scroster.html].

More Information

The Web site [http://irm.cit.nih.gov/sectrain/infosb.html] provides a large amount of information, including details of the Computer Security Act of 1987, the Privacy Act of 1974, and the AISSP Handbook.

Next Disaster Recovery Test Is Scheduled for March 27

The next disaster recovery test is scheduled for March 27, 2002. If you wish to participate in the NIH Computer Center's disaster recovery program or to discuss your critical application requirements for the Titan, South, or EOS systems, please call the TASC help desk and ask to speak to the disaster recovery coordinator.

CIT Course Scheduled for March 13

If you wish to learn about disaster recovery planning and the NIH Computer Center's disaster recovery program, a disaster recovery course is being offered on March 13 through the CIT computer training program.

The course provides an introduction to disaster recovery planning and will cover topics such as:

- basic steps for developing and implementing a disaster recovery plan
- recovery strategies for various computer environments including client/server configurations and the central processing configurations
- NIH Computer Center disaster recovery program

You may register for the course online via the CIT training Web page [http://training.cit.nih.gov].

South Transition to Titan—Keep Informed with "Titan/South System News"

With the move of the North system to Titan, the transition to the OS/390 standard system is half complete. The next phase—the South system transition to Titan—will begin in the next few months, after the ability to share data between Titan and the South system has been established.

Want to be well informed so you can prepare in advance and have a smoother transition when the ultimate migration occurs?

Get into the habit of reading the "Titan/South System News," our primary means of communicating with Titan and South system users. This Web-based newsletter replaces *Interface*'s technical articles and announces events, equipment and software upgrades, and other issues of interest to Titan and South system users. The newsletter also allows us to send you—at short notice—important news or updates on outages.

To get e-mail notice of new issues, join the NIH Listserv list "CIT-Titan-News" online [http://list.nih.gov/archives/cit-titan-news.html].

Recent articles in "Titan/South System News" have included:

> Data Set Encryption on Titan Being Considered

RACF High-Level Profiles to Be Required
NIH Computer Center to Eliminate Inactive USERids
New Message for Batch Jobs That Access Tapes
South System Accounts—Web Sponsor Now Allows Multiple Alternate Sponsors
Titan's Web Sponsor Replaces the North System's RACFREG

You can read all articles online [http://datacenter.cit.nih.gov/titannews].

CIT Seminar on Security Topics

You should also consider signing up for the April 30 session of "Titan Transition—Where's My Keyword?" This CIT training seminar provides an overview of RACF on Titan and offers hints for getting rid of your reliance on keywords. You can register online via the CIT training Web page [http://training.cit.nih.gov], or by calling the TASC help desk.

New Computer Classes Available from the CIT Training Program

The CIT Computer Training program has begun its spring term of classes. Joining returning favorites are many new classes that have been scheduled for scientists, computer support staff and users. Classes are offered without charge, and sign-up is available on the training Web page [http://training.cit.nih.gov].

- **Seminars for Scientists**

  For NIH researchers doing sequence analysis, two new classes are available. "High-Volume, High-Speed Sequence Analysis on the Biowulf Supercluster" will examine various options available at NIH for those needing to do large-scale projects. "Homology Modeling with GeneMine" will study a free program for sequence analysis and visualization that makes use of analysis servers across the Internet to filter for meaningful results.

  Scientists analyzing microarray data also have a new option. "Statistical Analysis of Microarray Data" will provide an overview of statistical issues that arise in the design and analysis of microarray studies followed by a hands-on demonstration of BRB Array Tools. It is a follow-up to the continuing "mAdb Basic Informatics" class.

- **General Seminars**

  Blackberry wireless handheld devices have become very popular at NIH. "Blackberry Tips and Tricks" will help users to understand and optimally use their many capabilities.

  As concerns about computer security continue to grow, two more classes have been added to the many security offerings in the program. "Basic Security Principles" is intended to introduce a non-technical user to the principles of how to keep data secure at NIH. "Building a Secure Home Network" is a hands-on class will include discussion of CIT's remote access solutions and evaluation of various software packages and hardware that support home networks.

- **Internet Resources**

  In response to many student requests, the new "XML Basics" will provide a hands-on class across six sessions. It will cover the basics of XML and DTD syntax as well as how XML documents can be transformed using XSL style sheets.

- **Personal Computers**

  For FileMaker users, "Advanced FileMaker Pro 5" has joined the existing introduction and intermediate classes. Students will learn to create an integrated database system that will use advanced automation, word processing, and navigation features. The hands-on lab exercises for these courses will be available on both PCs and Macs.

  Microsoft is bringing demonstrations of many of its newer products. "Overview of Office X for the Mac" brings one of their Macintosh specialists to provide a look at this first version of Office to be native to the OS X operating system. Microsoft will also be presenting "Data Visualization Using Microsoft Data Analyzer and MapPoint .NET," "Software Construction Using Microsoft Component Systems," and "Enterprise Project Management Using Microsoft Project 2002."

As always, classes are available free of charge to NIH employees and other users of NIH computing facilities. The courses are offered to help individuals become more efficient and effective in using computing, networking, and information systems in their work.

To obtain full course information or to register for classes, please visit the training Web page [http://training.cit.nih.gov/]. Of course, you are always welcome to discuss course registration, teaching a class, or other training issues—just call the TASC help desk.

Training Calendar—Spring 2002

March

213	SAS Programming Fundamentals II	3/4 - 3/5
643	XML Basics	3/4, - 4/ 8
865	Introduction to Programming	3/5 - 3/8
315	EHRP/PeopleSoft Hands-On Workshop for NIH HR Staff	3/5
972	mAdb Basic Informatics	3/6
311	Data Visualization Using Microsoft Data Analyzer and MapPoint .NET	3/6
977	Microarray and Oligoarray Analysis Using GeneSpring	3/7
351	Introduction to Networks	3/8
961	Introduction to Image Processing I	3/11 - 3/22
883	Macintosh Tips and Techniques	3/12
340	NIH NED: Administrative Officer and Technician Training	3/12
946	Making Movies of Molecules	3/12
173	DWAnalyze: Human Resources	3/12
675	WIG – World Wide Web Interest Group	3/12
400	Fundamentals of Unix	3/13 - 3/15
823	Creating Presentations with PowerPoint for the PC	3/13
718	Disaster Recovery	3/13
301	Relational Database Overview	3/14
637	Introduction to HTML	3/15
184	DWQuery: Procurement & Market Requisitions	3/15
868	Overview of Microsoft Office X for the Mac	3/18
867	Introduction to the Macintosh Operating System	3/19
970	NIH Biowulf – A Supercluster for Scientific Applications	3/19
182	DWQuery: Property Management	3/19
875	Intermediate FileMaker Pro 5	3/19
373	LISTSERV Electronic Mailing Lists: Hands-On Workshop for General Users	3/20
805	Hands-On Windows 2000 Server for System Administrators	3/20
639	Introduction to Cascading Style Sheets	3/21
180	DWQuery: Budget & Finance	3/21
720	Computer Security Forensics	3/21
315	EHRP/PeopleSoft Hands-On Workshop for NIH HR Staff	3/21
374	LISTSERV Electronic Mailing Lists: Hands-On Workshop for List Owners	3/22
155	Data Warehouse Orientation	3/25
962	Introduction to Image Processing II	3/25, 27, 29
990	Genetics Computer Group (GCG) Sequence Analysis	3/26 - 3/28
726	Using Email at NIH	3/26
824	PowerPoint Topics: Graphs, Links and More	3/26
877	BRMUG – Biomedical Researchers Macintosh User Group	3/26
195	DWQuery: Staff Training & Development	3/27
681	Overview of Microsoft's C# Language	3/27
346	KMIG – Knowledge Management Interest Group	3/27

Dates to Remember

Now . . .

- ColdFusion hosting is available at the NIH Computer Center.

- Biowulf offers new scientific software for computational chemistry, statistics and sequence analysis. [See issue 214]

- *NBRSS Today* (February 2002) is on the Web. [See issues 214, 216, 221]

- VPS printers can now be reset by users via the Web. **S**

- Updated *NIH Computer Center User's Guide* is available. **S T**

On . . .

March 27	Disaster recovery test. **E S T**
May 6	SAS upgrade to version 8.2 will be available. **S T**

2002 . . .

November 13	Disaster recovery test. **E S T**

E	EOS System
S	OS/390 South System
T	OS/390 Titan System

Articles in other issues of *Interface* appear in brackets [ ].

Popular Web Sites for NIH Computer Center Users

Service	Web Address
National Institutes of Health	http://www.nih.gov
Antivirus Web site	http://antivirus.nih.gov
NIH Electronic Directory	http://nedinfo.nih.gov
NIH Data Warehouse	http://datatown.nih.gov
Software Distribution Project	http://sdp.cit.nih.gov
Center for Information Technology	http://cit.nih.gov
Computational Bioscience	
Molecular Modeling	http://cmm.info.nih.gov/modeling
NIH Computer Center Systems	http://datacenter.cit.nih.gov
ALW	http://www.alw.nih.gov
Helix Systems	http://helix.nih.gov
NIH Biowulf Cluster	http://biowulf.nih.gov
Enterprise Systems	http://datacenter.cit.nih.gov/enterprise.html
OS/390	http://titan.nih.gov/
Problem Reporting	http://datacenter.cit.nih.gov/srt
• *Titan*	
SILK Web	http://titan.nih.gov/
Transition Update	http://silk.nih.gov/silk/titan
Web Sponsor	http://websponsor.cit.nih.gov
• *South*	http://datacenter.cit.nih.gov/mvs
RACF	http://silk.nih.gov/racf
SILK Web	http://silk.nih.gov
Database Technologies	http://silk.nih.gov/dbtech
Web Sponsor	http://silk.nih.gov/sponsor/homepage
Enterprise Open System (EOS)	http://datacenter.cit.nih.gov/eos
Application Service Request	http://silk.nih.gov/asr/request
NT Applications Servers	http://datacenter.cit.nih.gov/nt
Application Service Request	http://silk.nih.gov/asr/request
ColdFusion	http://cfhosting.cit.nih.gov
NIH Backup and Recovery Service	http://silk.nih.gov/silk/nbars
Oracle License Information	http://silk.nih.gov/silk/oracle
Oracle Database Servers	http://silk.nih.gov/silk/citoracle
Customer Services	
Accounts	http://support.cit.nih.gov/accounts
Customer Support	http://support.cit.nih.gov
Publications	http://publications.cit.nih.gov
TASC Help Desk	http://support.cit.nih.gov
Training	http://training.cit.nih.gov
Network Systems	
Listserv	http://list.nih.gov
NIHnet	http://www.net.nih.gov
Parachute	http://parachute.nih.gov

NIH COMPUTER CENTER Hardware and Software

ENTERPRISE SYSTEMS

OS/390 (MVS) SYSTEMS

OS/390 Systems Hardware

The OS/390 facility is an integrated multiprocessor complex, interconnected by shared disk storage. There are two IBM 9672 model RB6 systems, each with 2 processors. Each system has two gigabytes (GB) of memory and a complement of several hundred peripheral devices.

The peripheral devices include:

    9392 disk drives (RAMAC)
    3480 cartridge tape drives (18 track, 38,000 BPI)
    3490E cartridge tape drives (36 track, 38,000 BPI)
    3422 tape drives (6250/1600 BPI)
    STK 9310 (Powderhorn) ATL
    STK 9490 (Timberline) cartridge tape drives (36 track, 38000 BPI)
    STK virtual tape storage subsystem (VTSS)
    STK 9840 ultra high performance magnetic tape drives
    3990 DASD Cache Storage Controllers
    9390 DASD Cache Storage Controllers
    3900 laser printing subsystems
    3160 cut-sheet laser printers
    4245 impact printers
    OSA-2 (Open System Adapter) Fast Ethernet
    3745 communications controllers
    5665 NCR Comten communications controllers

Peripherals are available to all processors, providing nonidle redundancy and minimal disruption of service in the event of any subsystem or component failure.

```
+----------------------------------------+
|      IBM 9672-RB6 Serial Numbers       |
|                                        |
|      CP0=044625, CP1=144625            |
|      CP0=044626, CP1=144626            |
+----------------------------------------+
```

OS/390 Systems Software

S = South System, T =Titan

OS/390 Operating System
    The IBM OS/390 Operating System using job control language as the user interface and the Job Entry Subsystem Version 2 (JES2), (S, T). A Unix-based component of OS/390 is installed (S, T).

SILK Web Facilities
    Customized, public, and secure servers available for general use. SILK provides online services that include: directory and account information, management functions, RACF processing, data set listing, batch job submission, and e-mail through a Web interface (S, T).

Interactive Systems
    CICS (T), ISPF (S, T), TSO (S, T), NIH Extended WYLBUR (S), and ACS WYLBUR (T)

Databases
    ADABAS (T), Model 204 (T), DB2 (S), and IMS (S)

Language Processors
    COBOL/370 (S, T), VS FORTRAN (S, T), PL/I for OS and VM (S, T), REXX (S, T), High Level Assembler (S, T)

Graphics Systems
    SAS/GRAPH (T)

Scientific Statistical Systems
    SAS (S, T), SPSS (S, T)

Other
    File management systems - VISION:Builder (S, T), VISION:Report (S, T), IRS (T); BookManager online documentation system (T); CONNECT:Direct for online financial transactions (S, T); VPS printing service (S, T)

Connectivity Products for Access to the OS/390 Systems
    Terminal emulation and full connectivity client software for telnet and dialup connections. Supported software packages include MS-Kermit (S), QWS3270 PLUS (S, T), NetTerm (TNVT) (S), and WS_FTP Pro (S, T).

NIH COMPUTER CENTER Hardware and Software

EOS (UNIX)

Unix System Hardware

Compaq AlphaServer GS60
  4 CPUs (500 MHz EV6)
  4 GB RAM

Compaq/Digital AlphaServer GS140
  10 CPUs (440 MHz)
  8 GB RAM

Numerous Compaq/Digital AlphaServers: 1000s, 1200s, and a 4100

Sun Enterprise 250 and 420-R servers

Unix System Software

Tru64 UNIX Operating System

Sun Solaris Operating System

Installed Software (commercial)
  DEC COBOL
  DEC C
  DEC C++
  Netscape Enterprise Server
  Oracle Web Application Server

Database
  Oracle

WINDOWS NT/2000 APPLICATION SERVERS

Windows NT and Windows 2000 applications can be hosted on a series of servers that are carefully managed and monitored by CIT on a 7x24 basis. These are Compaq Enterprise class servers and storage arrays. This facility provides a computing environment that has been proven suitable for mission-critical, enterprise-wide applications.

Hardware

Compaq DL360
Dual- Intel Pentium III 800MHz Processors
512MB SDRAM expandable to 4 GB
Storage: 2 Internal Drives - 9.1, 18.2, or 36GB - large storage arrays available
Size: 1U

Compaq DL380
Dual - Intel Pentium III 933MHz Processors
512MB SDRAM expandable to 4 GB

Storage: 4 - 6 Internal Drives - 9.1, 18.2, or 36GB - large storage arrays available
Size: 3U

Compaq DL580
Quad - Intel Pentium III 700MHz/2MB Xeon Processors
1GB SDRAM expandable to 16 GB
Storage: 4 Internal Drives - 9.1, 18.2, or 36GB - large storage arrays available
Size: 4U

Compaq 8500
An 8 way (8 processor) - Intel Pentium III 700MHz/2MB Xeon Processors
2GB SDRAM expandable to 16 GB
Storage: 4 Internal Drives - 9.1, 18.2, or 36GB - large storage arrays available
Size: 7U

Windows Application Software

NT 4.0 Server is our standard operating system, with Windows 2000 service in the near future.
Major components of the Microsoft BackOffice Suite of applications, with services such as Terminal Server, SQL Server, Exchange, and IIS, are supported in an enterprise-wide environment.
Other user specified and support software including:

NBARS—automatic backup/recovery services for distributed file servers

OTHER SERVICES

Oracle server software for use on several platforms with concurrent Oracle usage rights.

Site license agreements for distributing SAS for PC clients.

Central Email Service (CES) provides e-mail services for the NIH community.

NBARS, an OS/390-based service using TSM software, provides backup and recovery for distributed data.

The Disaster Recovery Program provides disaster recovery facilities and services for "critical" applications that run on the OS/390 systems and the EOS system.

HELIX SYSTEMS

http://helix.nih.gov

The NIH Helix Systems manage high-performance computing systems for the NIH intramural scientific community. The staff provides training, documentation and consulting for the resources on these systems. The front-end SGI Origin 2000 system (with the network name helix.nih.gov) is used for many scientific applications as well as general purpose tasks, such as reading mail, transferring files and web browsing.

Additional systems offer special computational capabilities that enable compute-intensive scientific applications to run faster or more efficiently. An SGI Origin 2400 (nimbus.nih.gov) augments helix by running specific scientific applications or user programs that require long execution times. The NIH Biowulf Cluster (biowulf.nih.gov) is a Beowulf parallel processing system that currently has 488 processors. Biowulf was built by members of the Helix Systems staff and runs the Redhat Linux operating system. A pair of SGI Origin 2000s with 48 processors between them (galaxy/quasar) are designed for the development and execution of high performance parallel applications. The SGI systems run the IRIX operating system, and are jointly funded by the Division of Computer System Services (DCSS) and the Division of Computational Bioscience (DCB).

Helix Systems Software

http://helix.nih.gov/apps

In addition to the standard Unix tools for software development, text formatting, and network communications, software packages include:

Scientific Applications
    BioInformatics: GCG, Fasta, Blast, ClustalW, sequence format converters, BoxShade
    Structural Biology: X-Plor, Quest, Gaussian, Charmm
    Molecular Modeling: AMBER, Charmm, DOCK, Fdiscover, LOOK, Insight, NAOMI, Sybyl. Available on helix through MMIGNET
    Mathematical/Graphical Analysis: Mathematica, MATLAB, S-PLUS, IMSL, xmgr, Xplot
    Image Analysis: Analyze, AnalyzeAVW, AVS, IDL, xv, imgworks, convert, GIMP, GPHIGS, PHIGURE
    Molecular Graphics: Grasp, Molscript, Molauto, PovChem, Povscript, PovRay, Ribbons

Biological Databases
    GenBank: nucleic acid sequences
    PIR: protein sequences
    Genpept: protein translations from Genbank
    SwissProt: curated and highly annotated protein sequence database
    PDB: protein structures

    Cambridge Structural Database: small organic and organometallic molecules

Programming Language/Tools
    C, FORTRAN 77, Fortran 90, Lisp , gcc, C++, and other typical Unix tools like awk and perl

    Vector compilers, MPI library, batch systems
    Static analyzer, debugger, and performance analyzer tools

Subroutine Libraries
    IMSL: mathematical and statistical routines
    FIGARO: 2- and 3-d interactive graphics routines

Network Services
    mail, pine, and Emacs rmail: e-mail readers
    ftp: Internet file transfer utility
    Kermit: file transfer via modem
    X Window System: supports X-windows scientific applications such as S-PLUS, Mathematica, MATLAB, SeqLab.
    Netscape and lynx: web browsers
    Tin, rn, xrn: newsgroup reader
    WebTermX: Web browser plug-in that lets Windows PCs run the X Window System
    eXodus: X Windows System for Macintosh

Editors
    Pico, vi, edt, nedit, xedit, and GNU Emacs: full-screen editors
    ed and ex: line editors

Web-based Services

http://helix.nih.gov/webapps

    Xwindows: Graphics applications run on helix can be displayed on a desktop Mac or PC

    Scientific applications: GCG-Lite, Molecules'R'Us, SeqWeb, and other web interfaces to scientific tools

    Literature Searching: Web of Science, a citation-oriented database of scientific literature. Contains the Science Citation Index Expanded and the Social Science Citation Index Expanded

    Porpoise: automatic alert service for new scientific literature that searches the weekly updates of the Web of Science

    WHALES: automatic alert service for new sequences in the major nucleotide and protein databases

    NIH Directory and Email Forwarding Service

Helix Systems Hardware

The SGI Origin 2000 system (helix) consists of 8 processors based on the MIPS R12000 chip. Each CPU has shared access to 2 GB of memory.

The SGI Origin 2400 (nimbus) consists of 8 processors based on the MIPS R12000 chip. Each CPU has shared access to 4 GB of memory and 20 GB of swap space.

NIH COMPUTER CENTER Hardware and Software

The 32-processor Origin (galaxy) utilizes MIPS R10000 processors and has a total of 8 GB of system memory. The 16-processor Origin (quasar) utilizes MIPS R12000 processors and has a total of 4 GB of system memory.

The Biowulf cluster consists of 488 dual-processor Pentium 450 MHz, 550 MHz and 866 MHz nodes, most with 512 MB of memory and 8 GB of disk. Each node is connected to a fast Ethernet switch (100 Mb/s). For applications that can take advantage of more memory and higher network speeds, some nodes contain as much as 2 GB of memory and others are connected to a gigabit speed network.

The Helix systems are restricted to NIH use.

ALW SYSTEM

http://www.alw.nih.gov

The Advanced Laboratory Workstation (ALW) System is a general-purpose, open, distributed computing system. All Advanced Laboratory Workstations are interconnected by the NIH campus-wide network, which they use to share resources and access services. The AFS file system provides distributed file services.

ALW System Hardware

Client workstations
  Sun SPARCstations
  Silicon Graphics
File Servers
  5 servers with combined storage of over 300 GB

ALW Application Software

Genomic sequence analysis packages
  Refer to http://www-bimas.cit.nih.gov/

Image processing
  Analyze - medical image processing
  Khoros - abstract visual language
  MEDX - medical imaging processing

Mathematics packages
  Mathematica
  Matlab
Molecular modeling software
  Refer to http://cmm.info.nih.gov/modeling
Statistical packages
  Prophet
  SAS
  S-PLUS
Office automation applications
  StarOffice - integrated spreadsheet, word processing and graphics
  FrameMaker - desktop publishing
  WordPerfect - word processing
Other software
  Emacs - text editor
  Gnu software and development tools
  Internet Explorer - web browser
  Netscape - web browser
  PTR - problem reporting system for ALW
  Softwindows95 - Windows95 emulator

NETWORKS

NIHnet
  a high-speed network backbone that interconnects NIH LANs, the Computer Center central servers—enterprise (OS/390, Open Systems, and Windows NT/2000 Application Servers) and scientific (Helix and ALW Systems)—and the Internet. The LAN protocols that are supported for NIHnet connectivity include TCP/IP, AppleTalk, and IPX. Users on NIHnet LANs with these protocols are provided with remote login and high-speed access, fast file transfer, and local and worldwide electronic mail connections. Dialup access to NIHnet is available for NIH employees through Parachute.

Internet
  an international collection of networks, supported by major research institutions, that communicate with each other using TCP/IP protocols. The Internet offers file transfer, remote login (telnet) electronic mail, and World Wide Web connections.

NIHnet Mail Gateway
  a set of gateways, allowing the exchange of electronic mail among users of all mail systems supported at NIH and between NIH users and other users on the Internet. (Note: not all mail systems support the exchange of attachments).

COMPUTER Services Telephone Directory

Service	Office	Bldg/Rm	Telephone (301)
ENTERPRISE SYSTEMS (OS/390), Unix, Windows NT/2000 Servers)			
Database Support	Database Systems Branch	12/2200	496-9158
IMS Support	Database Systems Branch	12/2200	496-6244
Help Desk	TASC	12A/1011	594-6248
New Applications	Application Services Branch	12A/4011	496-5524
Operating Schedule – OS/390 (recording)	--	--	402-2211
Security Investigations and Assistance	TASC	12A/1011	594-6248
Fax Number	--	--	496-6905
Security Policy	CIT Security Coordinator	12A/4033	496-1053
Tape Library	Systems Operations Mgmt. Branch	12/1100	496-6021
SCIENTIFIC SYSTEMS (Helix and Advanced Laboratory Workstation)			
Help Desk - ALW**	TASC	12A/1011	594-6248
Help Desk - Helix	TASC	12A/1011	594-6248
Operating Schedule – Helix, EOS (recording)	--	--	402-2212
Operator - Helix	--	12/2200	496-6755
CONNECTIVITY SERVICES (E-mail, Networks, File Transfer, Access to Enterprise and Scientific Systems)			
Help Desk	TASC	12A/1011	594-6248
GENERAL SERVICES			
Accounts/Billing, Registration	TASC	12A/1011	594-6248
ADB Support**	TASC	12A/1011	594-6248
Application Programming**	Division of Enterprise and Custom Applications	Federal Bldg.	594-6248
Computer Center General Policy	Director, Division of Computer System Services	12A/4039	496-5381
Computer Center Security Policy	CIT Security Coordinator	12A/4033	496-1053
Disaster Recovery Process	Disaster Recovery Coordinator	12A/4033	496-1053
Documentation/Publications	Technical Information Office	12A/1011	594-6248
Output Distribution and Foreign Tape Handling			
NIH Campus	Output Distribution	12A/1000	496-6183
Parklawn Building	Output Distribution	2B70	443-4253
Public Information on CIT	Information Office, CIT	12A/4063	496-6203
Special Tape Handling	Output Distribution	12A/1000	496-6183
Statistical Packages	TASC	12A/1011	594-6248
TDD Line for Hearing Impaired	TASC	12A/1011	496-8294
Telecommunications Problems	TASC	12A/1011	594-6248
Training	TASC	12A/1011	594-6248

*Non-NIH number; requires "9" prefix.   **Services available to NIH employees only.

World Wide Web access to CIT through http://cit.nih.gov

TASC (Technical Assistance and Support Center) is open 8:00 A.M. - 5:00 P.M.

Telephone assistance is available 7:00 A.M. - 6:00 P.M.

Online Services Directory

Service	Internet Host Name	Dialup Access (301)	Status (301)
OS/390 (MVS) - South System			
WYLBUR (network)	**WYLBUR.CU.NIH.GOV**	402-2221	402-2211
2400-19200 bps (dialup)		*800-358-2221	
TSO (network)	**TSO.CU.NIH.GOV**	402-2223	402-2211
2400-19200 bps (dialup)		*800-358-2223	
TSO, DB2, IMS (Full-Screen 3270) (network)	**TN3270.CU.NIH.GOV**		402-2211
2400-9600 bps (dialup)		402-2227	
RJE Batch		480-0744	402-2211
2400-9600 bps (dialup)	N/A		
Network File Transfer	**FTP.CU.NIH.GOV**	N/A	N/A
OS/390 (MVS) - Titan (Standard System)			
TSO (Full-Screen 3270)	**TN3270.TITAN.NIH.GOV**	N/A	402-2211
RJE Batch		480-0744	402-2211
2400-9600 bps (dialup)	N/A		
Full-Screen 3270	N/A	480-0748	402-2211
2400-9600 bps (dialup)			
Network File Transfer	**FTP.TITAN.NIH.GOV**	N/A	402-2211
EOS (Unix)			
Compaq/Digital AlphaServers	**EOS.NIH.GOV**	N/A	402-2212
Helix Systems			
SGI Challenge System	**HELIX.NIH.GOV**	402-2222	402-2212
2400-33600 bps		*800-358-2022	
NIH Biowulf Cluster	**BIOWULF.NIH.GOV**	N/A	402-2212
NIHnet access through Parachute	N/A	402-6830	594-6248
		*800-827-0124	

NOTES
- **To access 402, 435, 443, 451, 480, 496, 594, or 827 numbers from other 402, 435, 443, 451, 480, 496, 594, or 827 numbers, use only the last 5 digits.**
- N/A: Not Applicable
- All telephone numbers are accessible through FTS.

* These 800 numbers should be used only by persons who do not have access to FTS2001.

Major Contributors

Pat Ashburn, DCS
Jean-Paul Boucher, DCSS
Susan Chacko, DCSS
Ray Danner, DCS
Kristen Dunn-Thomason, DCS
Shawn Googins, OD/ORS
Lori Gordon, DECA
Marina Gregory, NIH/OD
Kevin Haney, ODCIO/ISAO
Bob Klein, DCSS
Jeanne Krause, DCSS
Judy Mahaffey, DECA
Lanny Newman, OD/OPEC
Sue Oberthaler, DCSS
Kathy Scalzi, DCSS
Cheryl Seaman, ODCIO/ISAO
Norma Stern, DCSS
Ginny Vinton, DCSS
Adrienne Yang, DCSS

DCS   Division of Customer Service
DCSS   Division of Computer System Services
DECA   Division of Enterprise and Custom Applications
ODCIO/ISAO   CIT, Information Security Awareness Office
OD/OPEC   CIT, Office of Planning, Evaluation, and
               Communication
NIH/OD   NIH Business Systems, Executive Office
OD/ORS   NIH, Office of Research Services